#### REMARKS

The present application relates to inbred maize line PH7JD. Claims 1 and 40-42 are pending in the present application. No new matter has been added by way of amendment. Applicants respectfully request consideration of the claims in view of the following remarks.

#### Request for Information under 37 C.F.R. § 1.105

The Examiner has made a Request for Information under 37 C.F.R. § 1.105. The Examiner states the requested information is "required to make a meaningful and complete search of the prior art". See Office Action, p. 2.

Applicants provide answers to each of the Examiner's interrogatories discussed infra.

The Examiner begins by asking firstly, what were the original parental maize lines used to produce maize inbred line PH7JD? Please supply information pertaining to the lineage of the original parental lines back to any publicly available varieties. PHP02 and PH06N. Information pertaining to the lineage of the original parental lines is available within the PVP Application No. 200200011, attached as Appendix 1.

Secondly, what method and steps were used to produce maize inbred line PH7JD? Pedigree selection method produced by selfing for 6 generations.

Third, have any of said parental maize lines or progeny therefrom been disclosed or made publicly available?

- a. The parental maize line PHP02 was previously disclosed or made publicly available in PVP Certificate No. 8800212 and U.S. Patent No. 5,082,992. The parental maize line PH06N was previously disclosed or made publicly available in PVP Certificate No. 9700213 and U.S. Patent No. 5,675,066.
- b. No other progeny of the parental cross PHP02/PH06N was previously disclosed or made publicly available by Applicants prior to the earliest priority date.

Fourth, were any other maize lines produced by said method using said original parental maize lines, and if so, have said produced maize lines been publicly available or sold? If so, under what designation/denomination and under what conditions were said other maize lines disclosed or made publicly available? No maize line using the same F1 cross has been produced by said method using said original parental maize lines at or before the time of filing of the instant application.

In light of the above remarks, Applicants respectfully request reconsideration and compliance with the interrogatories under the Request for Information under 37 C.F.R. § 1.105.

#### Conclusion

In conclusion, Applicants submit in light of the above amendments and remarks, the claims as amended are in a condition for allowance, and reconsideration is respectfully requested. If it is felt that it would aid in prosecution, the Examiner is invited to contact the undersigned at the number indicated to discuss any outstanding issues.

No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,

LILA A. T. AKRAD, Reg. No. 52,550 McKEE, VOORHEES & SEASE, P.L.C.

801 Grand Avenue, Suite 3200
Des Moines, Iowa 50309-2721
Phone No. (515) 288 3667

Phone No: (515) 288-3667 Fax No: (515) 288-1338 CUSTOMER NO: 27142

- LATA/ bjh-

Attorneys of Record



200200011

### THE UNITED STATES OF AMERICA

TO ALE TO WHOM THESE PRESENTS SHALL COME:

Pioneer Hi-Bred International, Inc.

Thereas, there has been presented to the

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VALERTY OF SEXULLY REPRODUCED, OR TUBER PROPAGATED FLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS RESERVED AND MADE A PALT RESSOR, AND THE VALUOUS REQUESTEDSTOP OF LAWY IN SICH CASES MADE AND TRYOUGHD HAVE RESS COMPUTED WITH, AND THE THERETO, FROM THE RECORDS OF THE PLANT VALENTY PROTECTION OFFICE, AN THE APPLICATION PROCESTED IN THE APPLICATION PROCESSED OF THE PLANT VALENTY PROTECTION OFFICE, AND THE APPLICATION PROCESSED OF THE PLANT VALENTY PROTECTION OFFICE, AND THE APPLICATION PROCESSED OF THE PLANT VALENTY PROTECTION OFFICE, AND THE APPLICATION PROCESSED.

NOW, THEREFORE, THIS CENTRICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SUID APPLICATING AND THE SUCCESSOR, HERE OR A SERVICE OF THE HER PROPERTY PLANT FROM THE TERM OF TWENTY YEARS FROM THE DATE OF THEIR GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERSODIC REPLEMENMENT OF VARIET AND SECURISH THE PAYMENT OF THE REQUIRED FEES AND PERSODIC REPLEMENMENT OF VARIET AND SECURISH OF THE SEALOR OF THE VARIETY OF REPLEMENT OF THE PAYMENT OF REPLEMENT OF THE PAYMENT OF THE MOOVE PURPOSE, OR CONDITIONING IT FOR ANY OF THE ABOVE PURPOSE, OR CONDITIONING IT PROPARED OR, OR STOCKEN IT FOR ANY OF THE ABOVE PURPOSE, OR LOSSE IT IN PRODUCTION A HERBILD OF PROPARED AND THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. (#

CORN, FIELD

'PH7JD'

In Certinany Marces, I have hercanto set my hand and caused the scal of the Mant Buriety Arctection Office to be afficed at the City of Washington, D.C. this first day of July, in the

year two thousand and four

Commissioner
Plant Variety Protection Office
Agricultural Marketing Service

APPENDIX 1

REPRODUCE LOCALLY. Include form number a  U.S. DEPARTMENT OF AGRICULTURE AGRICULTURAL MARKETING SERVICE	na date on all reproduction	The following statements are made	APPROVED - OMB NO. 0581-0055 In eccordance with the Privacy Act		
AGRICULTURAL MARKETING SERVICE SCIENCE AND TECHNOLOGY DIVISION - PLANT VARIETY	PROTECTION OFFICE	1974.  (8 U.S.C. 652a) and the Peperwork Reduction Act (PRA) of 1995.  Application is required in order to determine if a plent veriety protect cartificate is to be issued (7 U.S.C. 2421). Information is held confident			
APPLICATION FOR PLANT VARIETY PROTEC (Instructions and Information collection burden s					
1. HAME OF OWNER		TEMPORARY DESIGNATION OR     EXPERIMENTAL NUMBER	3. VARETY NAME		
Pioneer Hi-Bred Internation			PH7JD		
<ol> <li>ADDRESS (Street and No. or RFD No., City, State and Zip Code, and 7301 NW 62<sup>nd</sup> Avenue</li> </ol>	(Country)	5. TELEPHONE (Include area code)	FOR OFFICIAL USE ONLY		
P.O. Box 85		515/270-4051	Land State		
Johnston, IA 50131-0085		6. FAX (Include area code)	200200011		
		515/253-2125	FILING DATE		
IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership,	IF INCORPORATED, GIVE STATE OF INCORPORATION)	DATE OF INCORPORATION			
corporation	IOWA	March 5, 1999	Oct, 15,200		
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SEE		PERSON LISTED WILL RECEIVE ALL PAPERS)			
			F FILING & EXAMINATION FEES:		
Steven R. Anderson			: 2705,00		
Research and Product Deve P.O. Box 85	Topment		R DATE 10/15/01		
Johnston, IA 50131-0085			C CERTIFICATION FEE:		
42			\$ 432.00 D DATE 6/18/04		
11. TELEPHONE (Include area code) 12. FAX (Include erea code)	(e) 13. E_MAIL		14. CROP KIND NAME (Common name)		
515/270-4051 515/253-2	125 <u>Steven.</u>	Anderson@Pioneer.com	CORN		
IS GENUS AND SPECIES NAME OF CROP	16. FAMILY NAM		17. IS THE VARIETY A FIRST GENERATIO		
Zea Mays	Gramin		HYBRID?		
8. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED	(Follow instructions on reverse)	19. DOES THE OWNER SPECIFY THAT	Yes No		
Exhibit A. Origin and Breading History of the Variety     Exhibit B. Statement of Distinctness		CERTIFIED SEED? See Section 83(s			
c. Exhibit C. Objective Description of the Verlety		YES (If "yes", answer lient end 21 below)	-		
d. 🔀 Exhibit D. Additional Description of the Variety (Optional		20. DOES THE OWNER SPECIFY THAT S NUMBER OF GENERATIONS?	EED OF THIS VARIETY BE LIMITED AS TO		
e. Exhibit E. Statement of the Basic of the Owner's Owners  t. Voschar Sample (2500 visible subracted each or, for title		YES NO			
<ol> <li>Voucher Sample (2500 viable untracted seeds or, for tub- verification that tissue culture will be deposited and mat repository)</li> </ol>	or propagated varieties intained in an approved public	21. IF "YES" TO ITEM 20, WHICH CLASS	ES OF PRODUCTION BEYOND BREEDER SEED		
<ol> <li>Fiting and Examination Fee (\$2,450), made payable to "To Plant Variety Protection Office)</li> </ol>			TERED CERTIFIED		
<ol> <li>HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED I</li> </ol>	A HYBRID PRODUCED FROM THIS N THE U.S. OR OTHER COUNTRIE	23. IS THE VARIETY OR ANY COMPONE 87 INTELLECTUAL PROPERTY RIGHT (	NT OF THE VARIETY PROTECTED BY PLANT BREEDER'S RIGHT OR PATENT)?		
☐ YES ☑ NO		☐ YES ☑ NO			
IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSIT EACH COUNTRY AND THE CIRCUMSTANCES. (Please use special)	TION, TRANSFER, OR USE FOR Indicated on reverse)	IF YES, PLEASE GIVE COUNTRY, DA	TE OF FILING OR ISSUANCE AND ASSIGNED		
		REFERENCE NUMBER. (Please use	speca indicated on reverse.)		
<ol> <li>The owner(e) declars that e viable semple of basic seed of the variet for e tuber propagated variety e tissue culture will be deposited in e</li> </ol>	ty will be furnished with application	n and will be replenished upon request in accordan	e with euch regulations as may be applicable,		
The undereigned owner(e) is(ere) the owner of this sexually reprodu- Section 42, and is entitled to protection under the provisions of Sec-			minorit, and season as required in		
Owner(e) is(ere) informed that false representation herein can jeopa IIGNATURE OF OWNER	rdize protection and results in pan	SIGNATURE OF OWNER	1		
		11-11-11	lison		
AME (Please print or type)		NASSE Please print or type)	·		
APACITY OR TITLE	DATE	Steven R. Anderson	DATE		

#### INSTRUCTIONS

GENERAL: To be effectively filed with the Plant Variety protection Office (PVPO), ALL of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed Exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,900 viable untreated seeds, for a hybrid variety at least 2,900 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verificated of each line necessary to reproduce the variety or for tuber reproduced varieties verificate of seal their necessary to reproduce the variety or for tuber reproduced varieties verificate that evidelic (in the sense that I will expression an entire plant) takes culture will be deposited and entertained by a part mour implication by the control of the product of the plant of the control of the plant of the control of the plant of the control of the plant of the pla on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. DO NOT use masking materiets to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$320 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

#### Plant Variety Protection Office Telephone: (301)504-5518 FAX: (301)504-5291

Homepage: http://www.ams.usda.gov/science/pvp.htm

#### ITEM

- 189 Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method:
  - (2) the details of subsequent stages of selection and multiplication;
     (3) evidence of uniformity and stability; and

  - (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified.
- 18b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
  - (1) Identify these varieties and state all differences objectively;
  - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
- (3) submit, if helpful, seed and plant specimens of photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 180 Exhibit C forms are available from the PVPO for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- Optional additional characteristics end/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comperative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plent hebit, plant disease 184 resistance, etc.
- 18e Section 52(5) of the Act required applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
- If "Yes" is specified (seed of this variety be sold by variety name only, as e class of certified seed), the applicant may NOT reverse this affirmetive decision after the variety has been sold and so lebeled, the decision published, or the certificate issued. However, If "No" has been specified, applicant may change the choice. (See Regulations and Rules of Practice, Section 7.103).
- . See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
- 23 See Section 5.5 of the Act for instructions on claiming the benefit of an earlier filing date.
- CONTINUED FROM FRONT (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the 22 variety (including eny harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries \
- CONTINUED FROM FRONT (Please give the country, date of filling or Issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).

NOTES; It is the responsibility of the applicant/owner to keep the PVPO Informed of any changes of address or change of ownership or assignment or owners representable during the first of the application-confident. These is no charge for filing a change of address. The fee for filing a change of ownership or assignment or any modification of owners name is specified in Section 97.75 of the regulations. (See Section 101 of the Act, and Sec. 97.73), 97.31, 97.175(h) of Regulations and Rules of Practice.)

To avoid conflict with other variety names in use, the applicant should check the variety names proposed by contacting: Seed Branch, AMS, USDA, Room 213, Building 306, Beltsville Agricultural Research Center-East, Beltsville, MD 20705. Telephone: (301) 504-8089.

Public reporting burden for this calculation of primerical to premise 30 minutes per response, including the time for reviewing instruction, searching entiting distinction, searching entiting distinction, searching entities an extension of the control of instructions of minutes and instructions of instructions of the control of instructions of

(voice) or (202) 720-1127 (TDD). USDA is an equal employment opports

#### Exhibit A. Origin and Breeding History

Pedigree: PHP02/PH06N)XTA041K1X

Pioneer Line PH7ID, Zea mays L., a dent com inbred, was developed by Pioneer Hi-Bred International, Inc. from the single cross hybrid PHP02 (Certificate No. 8800212) X PH06N (PVP Certificate No. 9700213) using the pedigree method of plant breeding. Varieties PHP02 and PH06N are proprietary inbred lines of Pioneer Hi-Bred International, Inc. Selfing was practiced from the above hybrid for 6 generations using pedigree selection. During line development, crosses were made to inbred testers for the purpose of estimating the line's combining ability. Yield trials were grown at Ithaca, Michigan as well as other Pioneer research locations. After initial testing, additional hybrid combinations have been evaluated and subsequent generations of the line have been grown and hand-pollinated with observations again made for uniformity.

Variety PH7JD has shown uniformity and stability for all traits as described in Exhibit C - "Objective Description of Variety". It has been self-pollinated and ear-rowed 4 generations with careful attention paid to selection criteria and uniformity of plant type to assure genetic homozygousity and phenotypic stability. The line has been increased both by hand and in isolated fields with continued observations for uniformity and stability, and for 3 generations during the final stages of inbred development and seed multiplication. Very high standards for genetic purity have been established morphologically using field observations and electrophoretically using sound lab molecular marker methodology.

No variant traits have been observed or are expected in PH7JD.

The criteria used in the selection of PH7JD were yield, both per se and in hybrid combinations; late season plant health, grain quality, stalk lodging resistance, and kernel size, especially important in production. Other selection criteria include: ability to germinate in adverse conditions; number of tillers, especially important in production because having numerous tillers increases hybrid production costs spent on detasseling; disease and insect resistance; pollen yield and tassel size.

Season/Year Pedigree Grown	Inbreeding Level of Pedigree Grown
Summer 1994	
PHP02, PH06N	F0
Winter 1994	
PHP02/PH06N	F1
Summer 1995	
PHP02/PH06N)X	F2
Summer 1996	
PHP02/PH06N)XTA0	F3
Summer 1997	
PHP02/PH06N)XTA04	F4
Winter 1997	
PHP02/PH06N)XTA041	F5
Summer 1998	
PHP02/PH06N)XTA041K1	F6
SEED	
PHP02/PH06N)XTA041K1X	F7

<sup>\*</sup>PH7JD was selfed and ear-rowed from F3 through F6 generation.
#Uniformity and stability were established from F5 through F7 generation and beyond when seed supplies were increased.

#### **Exhibit B. Novelty Statement**

Variety PH7JD mostly resembles Pioneer Hi-Bred International, Inc. proprietary inbred line PHP02 (PVP Certificate No. 8800212). The data in Table 1A and 1B are from t-tests collected from two environments in Johnston, IA. and one environment in Ankeny, IA.

Variety PH7JD has a lower percentage of sun scalding (11.6% vs 73.4%) compared to PHP02 (Table 1A, 1B, Figure 1).

Variety PH7JD has taller ear height (79.7 cm vs 67.5 cm) compared to PHP02 (Table 1C, 1D).

Full isozymes were run on the same gel for 5 individuals of each variety. Variety PH7JD differs for the marker isozyme at locus Amp1 (aminopeptidase1). Standardized isozyme analysis revealed that PH7JD is homozygous for allele Ampl-5 while PHP02 is homozygous for allele Amp1-4. These isozymes were stable and consistent for each of the 5 individuals tested for each genotype.

Variety PH7JD differs for the marker isozyme at locus Est4 (esterase4). Standardized isozyme analysis revealed that PH7JD is homozygous for allele Est4-3 while PHP02 is homozygous for allele Est4-5. These isozymes were stable and consistent for each of the 5 individuals tested for each genotype.

Figure 1. Sun scalding of leaves showing differences between PH7JD and PHP02.





# **Exhibit B Novelty Statement Tables**

Table 1A. Sun scalding data for 2 locations in Johnston, IA in 2001. Data is broken out by environment. Environments had different planting dates. The AD environment was irrigated and the JH environment was not irrigated in 2001.

% Plants with Sun	Scald		·		
		22	4	22	4
Total			20	7	4
Location # of Sun Scalded	Plants		ΑD	ᆨ	A A
Variety		PHP02	PHP02	PH7JD	PH7JD

Table 1B. Sun scalding data summarized across 2 locations in Johnston, IA in 2001.

Mean % Plants with Variety

Sun Scald 73.4% 11.6%

PHP02 PH7JD

Table 1C. T-test from 3 environments in 2000 supporting that the difference between the mean ear height for PH7JD and PHP02 is not 0.

5 . L. B	=	0.044	9
Preb_(ail)_P	o		o.
f. /alue_ Pooled	1.8	2.4	4.8
P P	80	80	80
StdErt or-2	2.227	3.942	
or-1	4.123	3.633	4.775 2.417
StdDe viation -2	4.980	8.815	4.775
stdDe. /ation -1	9.220	8.124	5.404
Weah.	8.4	12.8	15.6
Mean-II 2	74.6	60.2	67.6
Wean-1	83.0	73.0	83.2
Sound: 1	S	2	2
1 1	5	2	2
VanBty.	PH7JD PHP02	PH7JD PHP02	PH7JD PHP02
valnety-	PH7JD	PH7JD	PH7JD
Staffor	Α	느	ᆽ
Ä.	2000	2000	2000
	(E)	(E)	
	ght (	ght (	ght (
	ear height (cm)	ear height	ear height (cm)

Table 1D. Summary data showing T-test across 3 environments (5 plants per environment) in 2000 supporting that the difference between the mean ear height for PH7JD and PHP02 is not 0.

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#### DEFINITIONS

In the description and examples, a number of terms are used herein. In order to provide a clear and consistent understanding of the specification and claims, including the scope to be given such terms, the following definitions are provided:

ANT ROT = ANTHRACNOSE STALK ROT (Colletotrichum graminicola).

A 1 to 9 visual rating indicating the resistance to Anthracnose Stalk Rot. A

higher score indicates a higher resistance.

BAR PLT = BARREN PLANTS.

The percent of plants per plot that were not barren (lack ears).

BRT STK = BRITTLE STALKS.

This is a measure of the stalk breakage near the time of pollination, and is an indication of whether a hybrid or inbred would snap or break near the time of flowering under severe winds. Data are presented as percentage of plants that did not snap.

BU ACR = YIELD (BUSHELS/ACRE).

Yield of the grain at harvest in bushels per acre adjusted to 15.5% moisture.

CLD TST = COLD TEST.

The percent of plants that germinate under cold test conditions.

CLN = CORN LETHAL NECROSIS.

Synergistic interaction of maize chlorotic mottle virus (MCMV) in combination with either maize dwarf mosaic virus (MDMV-A or MDMV-B) or wheat streak mosaic virus (WSMV). A 1 to 9 visual rating indicating the resistance to Com

Lethal Necrosis. A higher score indicates a higher resistance.

COM RST = COMMON RUST (Puccinia sorghi).

A 1 to 9 visual rating indicating the resistance to Common Rust. A higher score indicates a higher resistance.

DIP ERS = DIPLODIA EAR MOLD SCORES (Diplodia maydis and Diplodia macrospora).

A 1 to 9 visual rating indicating the resistance to Diplodia Ear Mold. A higher score indicates a higher resistance.

DRP EAR - DROPPED EARS.

A measure of the number of dropped ears per plot and represents the percentage of plants that did not drop ears prior to harvest.

EAR HT = EAR HEIGHT.

The ear height is a measure from the ground to the highest placed developed ear node attachment and is measured in cm.

EAR MLD = GENERAL EAR MOLD.

Visual rating (1-9 score) where a "1" is very susceptible and a "9" is very resistant. This is based on overall rating for ear mold of mature ears without determining the specific mold organism, and may not be predictive for a specific ear mold.

EAR SZ = EAR SIZE.

A 1 to 9 visual rating of ear size. The higher the rating the larger the ear size.

ECB 1LF = EUROPEAN CORN BORER FIRST GENERATION LEAF FEEDING

(Ostrinia nubilalis).

A 1 to 9 visual rating indicating the resistance to preflowering leaf feeding by first generation European Corn Borer. A higher score indicates a higher resistance.

ECB 2IT = EUROPEAN CORN BORER SECOND GENERATION INCHES OF TUNNELING (Ostrinia nubilalis).

Average inches of tunneling per plant in the stalk.

ECB 2SC = EUROPEAN CORN BORER SECOND GENERATION (Ostrinia nubilalis).

A 1 to 9 visual rating indicating post flowering degree of stalk breakage and other evidence of feeding by Buropean Corn Borer, Second Generation. A higher score indicates a higher resistance.

ECB DPE = EUROPEAN CORN BORER DROPPED EARS (Ostrinia nubilalis).
Dropped ears due to European Corn Borer. Percentage of plants that did not

drop ears under second generation corn borer infestation.

EGRWTH = EARLY GROWTH.

This is the visual rating (1 to 9) of the amount of vegetative growth after emergence at the seedling stage (approximately five leaves). A higher score indicates better vigor or early season growth.

EST CNT = EARLY STAND COUNT.

This is a measure of the stand establishment in the spring and represents the number of plants that emerge on per plot basis for the inbred or hybrid.

EYE SPT = EYE SPOT (Kabatiella zeae or Aureobasidium zeae).

A 1 to 9 visual rating indicating the resistance to Eye Spot. A higher score indicates a higher resistance.

FUS ERS = FUSARIUM EAR ROT SCORE. (Fusarium moniliforme or Fusarium subglutinans).

A 1 to 9 visual rating indicating the resistance to Fusarium ear rot. A higher score indicates a higher resistance.

GDU = GROWING DEGREE UNITS.

Using the Barger Heat Unit Theory, which assumes that maize growth occurs in the temperature range 50°F - 86°F and that temperatures outside this range slow down growth; the maximum daily heat unit accumulation is 36 and the minimum daily heat unit accumulation is 0. The seasonal accumulation of GDU is a major factor in determining maturity zone.

GDU TO SHED.

The number of growing degree units (GDUs) or heat units required for an inbred line or hybrid to have approximately 50 percent of the plants shedding pollen and is measured from the time of planting. Growing degree units are calculated by the Barger Method, where the heat units for a 24-hour period are:

GDU = (Max. Temp. + Min. temp.) - 50/2
The highest maximum temperature used is 86° F. and the lowest minimum temperature used is 50°F. For each inbred or hybrid it takes a certain number of

GDUs to reach various stages of plant development.

GDU SHD definition.

GDU SHD

GDU SLK = GDU TO SILK.

The number of growing degree units required for an inbred line or hybrid to have approximately 50 percent of the plants with silk emergence from time of planting. Growing degree units are calculated by the Barger Method as given in

GIBERS = GIBBERELLA EAR ROT (PINK MOLD) (Gibberella zeae).

A 1 to 9 visual rating indicating the resistance to Gibberella Ear Rot. A higher score indicates a higher resistance.

GLF SPT = GRAY LEAF SPOT (Cercospora zeae-maydis).

A 1 to 9 visual rating indicating the resistance to Gray Leaf Spot. A higher score indicates a higher resistance.

GOS WILT = GOSS' WILT (Corymebacterium nebraskense).

A 1 to 9 visual rating indicating the resistance to Goss' Wilt. A higher score indicates a higher resistance.

GRN APP GRAIN APPEARANCE.

> This is a 1 to 9 rating for the general appearance of the shelled grain as it is harvested based on such factors as the color of harvested grain, any mold on the grain, and any cracked grain. High scores indicate good grain quality.

HC BLT HELMINTHOSPORIUM CARBONUM LEAF BLIGHT (Helminthosporium

carbonum). A 1 to 9 visual rating indicating the resistance to Helminthosporium infection. A

higher score indicates a higher resistance.

HD SMT HEAD SMUT (Sphacelotheca reiliana).

This score indicates the percentage of plants not infected.

KER KG KERNELS PER KILOGRAM.

The number of kernels per 1 kilogram of seed after discard is removed.

KSZ DCD KERNEL SIZE DISCARD.

The percent of discard seed; calculated as the sum of discarded tip kernels and

extra large kernels.

MDM CPX = MAIZE DWARF MOSAIC COMPLEX (MDMV = Maize Dwarf Mosaic Virus and MCDV = Maize Chlorotic Dwarf Virus).

A 1 to 9 visual rating indicating the resistance to Maize Dwarf Mosaic Complex.

A higher score indicates a higher resistance.

MST HARVEST MOISTURE.

The moisture is the actual percentage moisture of the grain at harvest.

NLF BLT = NORTHERN LEAF BLIGHT (Helminthosporium turcicum or Exserohilum

A 1 to 9 visual rating indicating the resistance to Northern Leaf Blight. A higher

score indicates a higher resistance.

PLT HT PLANT HEIGHT.

This is a measure of the height of the plant from the ground to the tip of the tassel in cm.

POL SC POLLEN SCORE.

POL WT

A 1 to 9 visual rating indicating the amount of pollen shed. The higher the score

the more pollen shed. POLLEN WEIGHT.

This is calculated by dry weight of tassels collected as shedding commences

minus dry weight from similar tassels harvested after shedding is complete.

PRM PREDICTED RELATIVE MATURITY.

This trait, predicted relative maturity, is based on the harvest moisture of the grain. The relative maturity rating is based on a known set of checks and utilizes standard linear regression analyses and is also referred to as the Comparative Relative Maturity Rating System that is similar to the Minnesota Relative

Maturity Rating System.

PRM SHD PREDICTED RELATIVE MATURITY GDU TO SHED.

A relative measure of the growing degree units (GDU) required to reach 50% pollen shed. Relative values are predicted values from the linear regression of

observed GDU's on relative maturity of commercial checks.

RT LDG ROOT LODGING.

Root lodging is the percentage of plants that do not root lodge; plants that lean from the vertical axis at an approximately 30° angle or greater would be counted as root lodged.

SCT GRN SCATTER GRAIN.

A 1 to 9 visual rating indicating the amount of scatter grain (lack of pollination or kernel abortion) on the ear. The higher the score the less scatter grain.

SEL IND = SELECTION INDEX.

The selection index gives a single measure of the hybrid's worth based on information for up to five traits. A maize breeder may utilize his or her own set of traits for the selection index. One of the traits that is almost always included is yield. When selection index data is presented, the tables represent the mean value averaged across testing stations.

SLF BLT = SOUTHERN LEAF BLIGHT (Helminthosporium maydis or Bipolaris maydis).

A 1 to 9 visual rating indicating the resistance to Southern Leaf Blight. A higher

score indicates a higher resistance.

SOU RST = SOUTHERN RUST (Puccinia polysora).

A 1 to 9 visual rating indicating the resistance to Southern Rust. A higher score indicates a higher resistance.

STAGRN = STAYGREEN.

Staygreen is the measure of plant health near the time of black layer formation (physiological maturity). A high score indicates better late-season plant health.

STK CNT = NUMBER OF PLANTS.

This is the final stand or number of plants per plot.

STK LDG. = STALK LODGING.

This is the percentage of plants that did not stalk lodge (stalk breakage) as measured by either natural lodging or pushing the stalks and determining the

percentage of plants that break below the ear.

STW WLT = STEWART'S WILT (Erwinia stewartii).

A 1 to 9 visual rating indicating the resistance to Stewart's Wilt. A higher score

indicates a higher resistance.

TASBRN = TASSEL BRANCHES.

This is the number of primary tassel branches.

TAS SZ = TASSEL SIZE.

A 1 to 9 visual rating was used to indicate the relative size of the tassel. The

higher the rating the larger the tassel.

TAS WT = TASSEL WEIGHT.

This is the average weight of a tassel (grams) just prior to pollen shed.

TEX EAR = EAR TEXTURE.

TEX EAR = EAR TEXTURE.

A 1 to 9 visual rating was used to indicate the relative hardness (smoothness of crown) of mature grain. A 1 would be very soft (extreme dent) while a 9 would

be very hard (flinty or very smooth crown).

TILLER = TILLERS.

A count of the number of tillers per plot that could possibly shed pollen was taken. Data are given as a percentage of tillers: number of tillers per plot divided by number of plants per plot.

TST WT = TEST WEIGHT (UNADJUSTED).

The measure of the weight of the grain in pounds for a given volume (bushel).

YLD SC = YIELD SCORE.

A 1 to 9 visual rating was used to give a relative rating for yield based on plot ear piles. The higher the rating the greater visual yield appearance.

## United States Department of Agriculture, Agricultural Marketing Service Science Division, Plant Variety Protection Office National Agricultural Library Building, Room 500 Beltsville, MD 20705

#### Objective Description of Variety Corn (Zea mays L.)

	Applicant (s)		Variety Seed Source	Variety	Name or Temporary Designation	
Pioneer	r Hi-Bred Inte	ernational, Inc.		PH7JD		
		FD No., City, State, Zip Code and	Country	FOR OFFICIAL USE		
7301 N	W 62 <sup>nd</sup> Avenu	e. P.O. Box 85.			200200011	
Johnsto	on, Iowa 5013	31-0085		PVP0 Number	2002000	
Leading :	zeroes if necessary y for an adequate	or that describes the varietal charact.  Completeness should be striven variety description and must be conconjunction with Munsell color co	for to establish an adequate va impleted.	riety description. Traits	tight justify whole numbers by adding lesignated by an '*' are considered	
01=Light		06-Pale Yellow	11=Pink	16=Pale Purple	21=Buff	
02=Mediu	ım Green	07=Yellow	12=Light Red	17∞Purple	22=Tan	
03=Dark (	Green	08=Yellow Orange	13=Cherry Red	18=Colorless	23=Brown	
	Dark Green	09=Salmon	14=Red	19=White	24=Bronze	
05=Green		10=Pink-Orange	15=Red & White	20=White Capped	25=Variegated (Describe) 26=Other (Describe)	
	RD INBRED CHO					
(Use the n	nost similar (in bac	kground and maturity) of these to	make comparisons based on g	row-out trial data):		
	ent Families:		Yellow Dent (Unrelated):	Sweet Co	m:	
Family	Members		Co109, ND246,	C13, Iov	va5125, P39, 2132	
B14	CM105, A632,		Oh7, T232,			
B37	B37, B76, H84		W117, W153R,	Popcorn:		
B73	N192, A679, B		W18BN	SG1533, 4722, HP301, HP7211		
C103	Mo17, Va102,	Va35, A682				
Oh43	A619, MS71, H		White Dent:	Pipecom:		
WF9	W64A, A554, A	A654, Pa91	C166, H105, Ky228	Mo15W	, Mo16W, Mo24W	

W64A, A554, A654, Pa91

1. TYPE:	(describe intermediate types in Co	mments section):			Standa	ard Variety	Name	-
2 1=Sweet 2=Dent 3=Flint 4=Flour 5=Pop 6=Omamental				W64A				
2. REGION WHERE DEVELOPED IN THE U.S.A.:			Stand	ard Seed \$	Source	_		
2 1	=Northwest 2=Northcentral 3=No	ortheast 4=Southeast 5=South	hcentral			AMES 192	291	
ε	=Southwest 7=Other							
3. MATU	RITY (in Region of Best Adaptabili	ty; show Heat Unit formula in	Comments' s	ection)				
DAYS	HEAT UNITS				DAYS	HEAT UN	ITS	
071	1.324.3 From emergence to 56	0% of plants in silk			069	1.274.7		
072	1.338.7 From emergence to 50	0% of plants in pollen			070	1,292.7		
004	0.090.3 From 10% to 90% poli	en shed			003	0.078.3		
	From 50% silk to optin	num edible quality			ĺ			
	From 50% slik to harve	est at 25% moisture						
4. PLAN	ī:		Standard	Sample		Standard	Sample	_
			Deviation	Size	1	Deviation	Size	10
199.0	cm Plant Height (to tassei tip)		01.00	03	102:0	115.05	03	200.7± 15
079.7	cm Ear Height (to base of top ea	r node)	05.77	03	046.3	40:15	03	69.7 I 1.
015.9	cm Length of Top Ear internode		01.22	03	012.9	01.45	03	
0.0	Average Number of Tillers		00.02	03	0.0	00.01	03	
1.0	Average Number of Ears per Sta	lk	00.06	03	0.9	00.09	03	
4	Anthocyanin of Brace Roots: 1=	Absent 2=Faint 3=Moderate	4=Dark 5=Ve	ery Dark	4			
5. LEAF:			Standard	Sample		Standard	Sample	_
o. L			Deviation	Size		Deviation	Size	
00.2	cm Width of Ear Node Leaf		00.20	03	10.1	00.42	03	
	cm Length of Ear Node Leaf		02.27	03	67.4		Ó3	
	Number of leaves above top ear		00.23	03	06	00.42	03	
	Degrees Leaf Angle (measure fro	m 2nd leaf above ear	03.08	03	21	03.99	03	
03	at anthesis to stalk above leaf) Leaf Color (Munsell code)	7.5GY34			03	5G\		
	Leaf Sheath Pubescence (Rate o		neach fuzz)		1	**		
	Marginal Waves (Rate on scale fr		pouci, iu.z.)		1 -			
	Longitudinal Creases (Rate on so				1			
6. TASSE	1.		Standard	Sample	<b>—</b>	Standard	Sample	_
U. IAGGE	-		Deviation	Size	Į.	Deviation	Size	
12	Number of Primary Lateral Branch	nes	00.72	03	07	02.80	03	
	Branch Angle from Central Spike		01.45	03	19	06.99	03	
	cm Tassei Length (from top leaf of	ollar to tassel tip)	05.33	03	50.5	02.80	03	
	Pollen Shed (rate on scale from 0			-	6		_	
	Anther Color (Munseil code)	7.5RP36	•		07		8.58	
	Giume Color (Munsell code)	10RP28 -			01		Y66	
	Bar Giumes (Giume Bands): 1=A				1	-		
					ļ			_
Applicatio	n Variety Data	Page 1			Standa	rd Variety	Data	

	Variety Data PH7JD Page 2				d Variet	
11 01 21 2 2	(Unhusked Data):  Silk Color (3 days after emergence) (Munsell code) Fresh Husk Color (25 days after 50% silking) (Munsell or Dyr Husk Color (65 days after 50% silking) (Munsell or Dyr Husk Color (65 days after 50% silking) (Munsell or Position of Ear at Dry Husk Stage: 1= Upright 2= Horit Husk Fightness (Rate of Scale from 1=very loose to 9 Husk Etkansoln (at harves): 1=Short (ears exposed) 2  3=Long (8-10 cm beyond ear tip) 4=Very Long (>10 cm	de) contal 3= Pendant every tight) =Medium (<8 cm)	7.5R58 5GY68 10YR92	01 21 3 5	2.5GY 5GY 2.5YE	<u>78</u>
7b. EAR	(Husked Ear Data):	Standard	Sample	Star	dard	Samp
		Deviation	Size	Devi	ation	Size
14.0	cm Ear Length	01.00	03	11.7 0	0.58	03
42.7	mm Ear Diameter at mid-point	01.15	03	41.0 0	1.00	03
112.3	gm Ear Weight	12.10	03	56.3 0	2.31	03
<u>16</u>	Number of Kemel Rows	00.58	03	16.3 0	0.58	03
2	Kernel Rows: 1=Indistinct 2=Distinct			2		
2	Row Alignment: 1=Straight 2=Slightly Curved 3=Spiral			1		
08.3	cm Shank Length	02.08	03	09.0	01.00	03
2	Ear Taper: 1=Slight 2= Average 3=Extreme			2		
8. KERNE	EL (Dried)	Standard	Sample	Standa	rd	Samp
		Deviation	Size	Deviati	on	Size
10.7	mm Kernel Length	00.58	03	09.0 0	0.00	03
07.7	mm Kernel Width	00.58	03	07.0 0	0.00	03
05.0	mm Kemel Thickness	00.00	03	04.7 0	0.58	03
51.7	% Round Kemels (Shape Grade)	12.50	03	68.7 0	9.29	03
1	Aleurone Color Pattern: 1-Homozygous 2=Segregating			1		
<u>07</u>	Aluerone Color (Munsell code)	10	YR710	<u>07</u>	2.5Y	312
07	Hard Endosperm Color (Munsell code)	10	YR612	07	10YR	814
03	Endosperm Type:			3		
	1=Sweet (Su1) 2=Extra Sweet (sh2) 3=Normal Stan 4=High Amylose Starch 5=Waxy Starch 6=High Pro 7=High Lysine 8=Super Sweet (se) 9=High Oil 10=Other					
25.7	gm Weight per 100 Kernels (unsized sample)	03.06	03	12.67 0	0.58	03
9. COB:		Standard	Sample	Sta	ndard	Samp
		Deviation	Size	De	viation	Size
25.0	mm Cob Diameter at mid-point	02.00	03	27.7 0	0.58	03
	Cob Color (Munsell code) 5R4					

Application Variety Data

Other (Specify) -----

Page 3

Fusarium Ear and Kernel Rot (Fusarium moniliforme) Gibberella Ear Rot (Gibberella zeae)

5 Standard Variety Data PH7.ID Application Variety Data Page 4 Standard Variety Data 11. INSECT RESISTANCE (Rate from 1 (most susceptible) to 9 (most resistant); (leave blank if not tested); Banks grass Mite (Oligonychus pratensis) Com Worm (Heilcoverpa zea) Leaf Feeding Silk Feeding ma larvai wt. Ear Damage Corn Leaf Aphid (Rhopalosiphum maidis) Com Sap Beetle (Carpophlius dimidiatus European Com Borer (Ostrinia nubilalis) 1st Generation (Typically Whorl Leaf Feeding) 2nd Generation (Typically Leaf Sheath-Collar Feeding) Stalk Tunneling cm tunneled/plant Fall Armyworm (Spodoptera frugiperda) Leaf Feeding Siik Feeding mg jarvaj wt. Maize Weevii (Sitophilus zeamaize Northern Rootworm (Diabrotica barberi) Southern Rootworm (Diabrotica undecimpunctata) Southwestern Corn Borer (Diatreaea grandioselia) Leaf Feeding Stalk Tunneling cm tunneled/plant Two-spotted Spider Mite (Tetranychus urticae) Western Rootworm (Diabrotica virgifrea virgifera) Other (Specify) --12. AGRONOMIC TRAITS: Staygreen (at 65 days after anthesis) (Rate 3 on a scale from 1=worst to excellent) % Dropped Ears (at 65 days after anthesis) 0.0 % Pre-anthesis Brittle Snapping % Pre-anthesis Root Lodging Post-anthesis Root Lodging (at 65 days after anthesis) 7.1 6.276.3 Kg/ha Yield of inbred Per Se (at 12-13% grain moisture) 3.759.0 13. MOLECULAR MARKERS: (0=data unavallable; 1=data available but not supplied; 2=data supplied):

COMMENTS (eg. state how heat units were calculated, standard inbred seed source, and/or where data was collected. Continue in Exhibit D):

0 RFLP's

Application Variety Data

1 Isozymes

Page 4

Standard Variety Data

0 RAPD's

#### CLARIFICATION OF DATA IN EXHIBITS B AND C

Please note the data presented in Exhibit C, "Objective Description of Variety," are collected primarily at Johnston and Ankeny, Iowa. The data in Exhibit B are from comparisons of inbreds grown in the same tests in the adapted growing area of PH7ID and in Johnston and Ankeny, IA. The data in Tables 1A and 1B are from paired comparison t-tests collected in Johnston and Ankeny, IA. These traits collectively show distinct differences between the two varieties.

The data collected in exhibit C was collected in 2000 for page 1 and 2. There were 3 different planting dates planted for these trials. There are environmental factors that differ from planting date to planting date. Environmental temperature and precipitation differences during the vegetative and grain ffill periods can impact plant and grain traits, and are a source of variability. The environmental conditions described above could result in larger standard deviations. The variation associated with environment to environment is normally higher than the variation associated within locations. I have enclosed a table that shows some of the temperature and precipitation in 2000. Please enclose this table as part of Exhibit D.

Exhibit D. Temperature and Precipitation differences from Ankeny, IA

#### TEMPERATURE

YEAR	MAY	JUN	JULY	AUG	AVERAGE
1994	59.8	70.7	71.9	69.0	67.9
1995	56.2	69.4	74.3	76.9	69.2
1996	56.2	69.3	71.3	70.5	66.8
1997	53.5	70.6	74.1	69.6	67.0
1998	64.7	66.6	74.8	73.5	69.9
1999	60.7	69.7	78.7	70.5	69.9
2000	63.5	68.9	73.2	74.2	70.0

#### RAINFALL

YEAR	MAY	JUN	JULY	AUG	Total
1994	3.67	5.75	1.71	4.18	15.31
1995	5.04	4.19	2.94	2.87	15.04
1996	8.47	4.35	2.51	2.14	17.47
1997	4.32	3.27	4.10	1.36	13.05
1998	6.46	11.07	5.70	4.96	28.19
1999	6.46	4.54	4.45	6.55	21.85
2000	5.40	5.80	3.16	1.78	16.14

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EXHIBIT E		
STATEMENT OF THE BASIS OF OWNERSHIP	Application is required in order to determ certificate is to be issued (7 U.S.C. 2421).	Information is held confidential
STATEMENT OF THE BASIS OF OWNERSHIP	until certificate is issued (7 U.S.C. 2426).	
NAME OF APPLICANT(S)	2. TEMPORARY DESIGNATION	3. VARIETY NAME
DIONICED HE DOED INTERNATIONAL INC	OR EXPERIMENTAL NUMBER	PH73D
PIONEER HI-BRED INTERNATIONAL, INC.		FILTO
4 .ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country)	5. TELEPHONE (include area code)	6. FAX (include area code)
7301 NW 62 <sup>nd</sup> AVENUE	515-270-4051	515-253-2125
P.O.BOX 85	7. PVPO NUMBER	200011
JOHNSTON, IA 50131-0085	200	200011
8. Does the applicant own all rights to the variety? Mark an "X" in appropriate bit	ock. If no, please explain: 🛛 YES	□ NO
9. Is the applicant (individual or company) a U.S. national or U.S. based company	y? ⊠ YES □ NO	
If no, give name of country		
10. Is the applicant the original owner?   ☑ YES ☐ NO If no, p	lease answer <u>one</u> of the following:	
a. If original rights to variety were owned by individual(s), is(are) the original	inal owner(s) a U.S. national(s)?	
☐ YES ☐ NO if no, give name of country		
b. If original rights to variety were owned by a company(les), is(are) the	original owner(s) a U.S. based company?	
☑ YES ☐ NO If no, give name of country		
11. Additional explanation on ownership (if needed, use reverse for extra space):		
PH7JD is owned by Ploneer HI-Bred International, Inc.		
PLEASE NOTE:		
	6.11	
Plant variety protection can be afforded only to owners (not licensees) who meet one of the	•	
1. If the rights to the variety are owned by the original breeder, that person must be a	U.S. national, national of a UPOV member cou	entry, or national of a country

- Which affords similar protection to nationals of the U.S. for the same genus and species.
- If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
- 3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed final breeding. See section 41(a)(2) of the Plant Variety Protection Act for definition.

profing to the Peperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this material collection is 0881-0085. The time required to complete this information confection is estimated to average 10 minutes per response, including the time for reviewing instructions, searching fing data accuracy, suffering and materialism great data accuracy, suffering and materialism great data accuracy, suffering and materialism great data accuracy suffering and materialism.

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